

IDENTIFYING SIGNIFICANT DEFICIENCIES IN A WATER SYSTEM

by Kari Salis

The Health Division performs sanitary surveys on all public water systems for the purpose of identifying significant deficiencies with the system, perform a compliance review, check on operation and maintenance procedures, and update our files. For a water system, a sanitary survey can be a useful tool by looking at all aspects of the water system and identifying ways to improve infrastructure, operations, or management of the system. Correcting all deficiencies in a water system, from source to service connection, will reduce the risk of contamination.

Current and upcoming regulations put an additional emphasis on the benefits of a sanitary survey. By understanding the items the Health Division considers significant deficiencies and the rationale behind each, water system operators can survey their own system on an on-going basis. This will allow operators to be aware of issues that would be significant deficiencies, make improvements to sources, reservoirs, or treatment units, and make operational or management changes when necessary, improving the overall operations of the water system and reducing the risk of a public health threat.

The Groundwater Rule and the Enhanced Surface Water Treatment Rule will require states to conduct periodic sanitary surveys and assure that deficiencies are corrected by water suppliers beginning in 2001. A system that already disinfects and has any uncorrected deficiencies will have to take at least 5 coliform samples per month. If a groundwater system is not practicing disinfection and deficiencies are left uncorrected, they will be required to install disinfection treatment.

On the next page is a list of items that qualify as significant deficiencies. Additional items would also be looked at during a sanitary survey, but they may not be serious enough to warrant immediate correction. This list can be used by water system operators. Our hope is that operators will save this list, go through their system and check things off if correct or after correction, and when OHD or the county comes to do the survey, there will be no deficiencies and you will get a big smiley face on your sanitary survey!!

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DRINKING WATER PROGRAM UPDATE

by Dave Leland

Interesting and challenging times continue in the drinking water field! Here are some highlights from the last several months.

MTBE

That's shorthand for methyl-tertiary-butyl ether, featured on the January 16 broadcast of "60 Minutes" on CBS. MTBE is a widely used gasoline additive that increases its oxygen content, and makes it burn cleaner to reduce air pollution. Unfortunately, when MTBE enters groundwater through leaking underground storage tanks, it spreads faster and farther than other gasoline components, and is turning up in some drinking water wells throughout the US. Once in water, MTBE is very difficult to remove by available treatment technologies. People can apparently detect its characteristic "turpentine" or "paint thinner" odor at very low levels. EPA assures us that, although the health effects of MTBE have not been thoroughly studied and analyzed, the level at which concerns about health effects would arise is far higher than the level at which odor is apparent. Based on the odor threshold, EPA established an "advisory level" for MTBE in drinking water of 20-40 ug/L (ppb).

In Oregon during 1999, DEQ conducted a survey of MTBE at 64 cleanup sites where groundwater has been impacted by gasoline from underground storage tanks. 487 samples were taken, and MTBE ranged from non-detect to 2,200 ug/L. 24% of the MTBE data were above 20 ppb, 10% of data were above 100 ppb, 6% of data were above 1,000 ppb, and none were above 10,000 ppb. 48% of the sites had one or more test result above 20 ppb.

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SANITARY SURVEY SIGNIFICANT DEFICIENCIES

Checklist for Water System Operators

[✓ when corrected]

Deficiencies related to surface sources:

- Filtration requirements not met
- No Acrylamide / Epichlorohydrin Certification
- Noted deficiencies in CPE not corrected

Well Construction deficiencies:

- Source has highly sensitive characteristics (part of Source Water Assessment)
- Sanitary seal and casing not watertight
- No screened vent
- Does not meet setbacks from coliform hazards
- Wellhead does not terminate above grade
- No concrete slab around casing
- No protective housing
- No raw water sample tap
- No treated sample tap, if applicable

Spring /other source deficiencies:

- Source has highly sensitive characteristics (part of Source Water Assessment)
- Springbox not impervious durable material
- No watertight access hatch / entry
- No intercepting ditch
- No screened overflow
- No bottom drain and shutoff valve
- Does not meet setbacks from coliform hazards

Disinfection deficiencies:

- DPD type test kit not used
- Free chlorine residual not maintained
- Chlorine not measured and recorded daily
- Insufficient protection from chlorine gas
- Minimum CT (Concentration x Time) requirement not met all times

Treatment deficiencies:

- Non approved chemicals (National Sanitation Foundation)
- Corrosion control parameters not met
- Dosages not recorded

Finished water storage deficiencies:

- Hatch not locked
- Roof and access hatch not watertight
- No drain to daylight
- No flap valve or equivalent over drain
- No screened vent
- Cathodic plates not watertight
- Interior coating not approved
- No annual inspection
- No cleaning plan
- Not continuously disinfected (redwood only)
- No separate inlet / outlet (redwood only)
- Hydropneumatic tank installed below grade
- No drain on hydropneumatic tank

Distribution system deficiencies:

- No distribution map
- System pressure < 20 psi
- Hydrants/blowoffs inadequate or absent
- No flushing program
- No ordinance or enabling authority (CWS)*
- Testing records not current (CWS)*
- Annual summary report not received (CWS)*
- No certified inspector (CWS, > 300 service connections)*
- No written program plan (CWS, >300 service connections)*

Monitoring Compliance:

- Monitoring not current
- MCL violations
- No approved written coliform sampling plan

Management deficiencies:

- No operations and maintenance manual
- No emergency response plan
- No Certified Operator at required level
- Not maintaining Continuing Education Units
- Major modifications not approved
- Master plan not current (> 300 service connections)
- System is under formal enforcement action

* Community Water Systems Only

CONSUMER CONFIDENCE REPORTS

by Mike Patterson

The deadlines have passed for the 1998 Consumer Confidence Reports (CCRs) and Certifications and most of the community water systems (85%) have completed and mailed their CCRs to their customers and to the Health Division.

So...Good job!! Most of you gave it your best shot! Many water systems prepared reports that went well beyond the minimum requirements. The well organized, easy-to-read reports have a better chance of actually being read and appreciated by your customers

The water system operators in Oregon work hard to provide safe water for their customers and the CCR provides the operators an opportunity to tell their customers what they are doing to improve the water system and to ensure a continuous, safe water supply.

Many of you used computer templates obtained from the Oregon Association of Water Utilities or the American Water Works Association. These templates lead you, step by step, through the preparation of the report.

There were a few operators who put forth minimal effort in preparing their reports which not only puts them in a bad light, but also makes it difficult or impossible for their customers to benefit from this regulation. The Consumer Confidence Report is so named because the consumer has the right to know what contaminants are, or could be, in their drinking water and whether or not their drinking water system was in violation of state and federal regulations during the year of the report.

With the first CCR behind us, I would like to list some do's and don'ts for your consideration:

(Consumer Confidence Reports)

DO:

1. Put the calendar year that the CCR covers at the top of the report. Currently the 1998 reports (the stragglers) and the 1999 reports (the early birds) are arriving at my desk.
2. Be careful with the conversion of the MCLs to whole number.
3. Know the delivery deadline and the certification deadline.
4. Send the CCR to the Health Division at the same time you send it to your customers.
5. Access our website for CCR information, violations and water testing data: <http://159.121.19.167>
6. Display detections for contaminants subject to mandatory monitoring in one table or in several adjacent tables. Any additional monitoring results, which the water system operator chooses to add, must be displayed separately.

DON'T:

1. Attach pages and pages of lab test results in place of the table of detections.
2. Include tests for the year of the report, and prior years as required. Do not jump ahead a year to get the "most current data".
3. Use extremely small print to compress your report into fewer pages. If you do, you are restricting access to those with limited eyesight.

(Certification Forms or Letters)

DO:

1. Use the Certification Form or put the certification in letter format.
2. Remember that the certification has two parts.
 - You certify that you have mailed it to your customers.
 - You certify that the information in the report is correct and consistent with the compliance monitoring data previously submitted to the primacy agency.

DON'T:

1. You don't have to send the certification by certified mail. You may if you wish.
2. You don't have to have the certification notarized. That is up to you.

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DRINKING WATER PROGRAM UPDATE *(continued from page 1)*

We received several calls from Oregon water suppliers asking our advice. There is no current requirement for MTBE testing in drinking water, although MTBE is covered by the EPA Unregulated Contaminant Rule which requires testing by certain water systems in 2001-03. We understand that our certified labs are able to analyze for MTBE using available analytical methods for volatile organic chemicals (VOCs), reportedly for around \$100. If you are getting calls from water users, or if you are concerned about the proximity of your wells to underground fuel tanks, we recommend that you contact your lab and arrange for tests. We are able to receive your results and post them to the drinking water database, although reporting is not required.

For more information:

- EPA web site (<http://www.epa.gov/safewater/mtbe.html>) - MTBE in Drinking Water Fact Sheet
- "MTBE in Oregon Update" Hough, M., Oregon DEQ. Oregon Insider, Eugene OR (December 15, 1999)
- "Occurrence of MTBE in drinking water sources". Gullick & LeChevallier. Journal American Water Works Association, vol. 92, issue 1, ppgs 100-113 (January, 2000)

Operator Certification - Small Water Systems

In the 1999 Legislature, we proposed to eliminate current statutory language exempting from certification requirements those operators of community water system using groundwater sources and serving fewer than 150 connections (HB 2176). We proposed eliminating the exemption in order to meet new EPA Operator Certification Guidelines under the Safe Drinking Water Act, and avoid a 20% annual

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reduction in Safe Drinking Water Revolving Loan Fund allotments beginning September 30, 2001. Our proposal was not adopted by the Legislature.

To prepare for a possible second attempt in the 2001 Legislature, we convened an operator certification workgroup, under the direction of the Drinking Water Advisory Committee, to attempt to develop a small water system operator certification program design that would be beneficial to and supportable by drinking water suppliers and constituency groups. The workgroup, made up of 19 members representing small water systems and organizations, met three times and developed a draft program outline. The draft program includes “grandparenting” of current operators, certification of new operators by either training or by exam, and continuing education requirements for all operators. Remaining issues include how to meet program costs for certification and training. We are now using the workgroup draft as the basis for the detailed legislative proposal and fiscal impact.

Radon Rule

EPA published the long-anticipated proposed rule on radon in drinking water on November 2, 1999. The final rule is scheduled for August, 2000. The rule applies to community water systems. Radon is a natural geologic contaminant and is present in soil and groundwater in Oregon. EPA attributes as many as 20,000 cancer deaths per year in the US to radon, overwhelmingly due to indoor air radon from soil gas.

This rule has some unique aspects. Radon is a hazard both from inhalation and ingestion. The main source of radon is from soil gas seeping into homes; drinking water is generally a much more minor source. However, radon in drinking water can contribute to the level of radon in air in homes. The rule attempts to address the overall risk from both indoor air and drinking water simultaneously. The rule allows for three alternative approaches to implementation:

1. Water suppliers meet an MCL for radon of 300 pCi/L, or
2. The State develops a statewide indoor air radon program (called a Multi-Media Mitigation program - MMM) with EPA approval, and water suppliers meet an Alternate MCL of 4,000 pCi/L, or
3. In the absence of a State MMM program, individual communities start their own local MMM programs and get EPA approval for them, and meet the AMCL of 4,000 pCi/L.

The overall risk in Oregon from radon exposure appears to be low. Available data suggests that a maximum of 4% of Oregon homes are located in areas where radon in soils could contribute to high levels in indoor air. Limited radon data in drinking water from a 1981 survey in Oregon showed that 23 of 65 deep community wells had radon above 300 pCi/L; the highest was 1,220 pCi/L.

That being said, the cost to Oregon water systems with radon in excess of 300 pCi/L would be substantial. The estimated capital cost of a packed tower aeration system to treat 100,000 gallons of water per day (500 people) is about \$100,000. So, there is a big incentive for us to attempt to establish a statewide MMM program in Oregon. But, EPA estimates that a state MMM program meeting EPA minimum standards would cost nearly \$400,000 per year. Partial funding support for such a program is available through either EPA radon program grants or from our allotment of the Safe Drinking Water Revolving Loan Fund; however, both of these require a 1:1 state funds match, about \$200,000 per year. This will likely be very hard to come by, given the apparent low risk to Oregonians.

We are drafting a proposed legislative concept for the 2001 Legislature for the state MMM. We have not identified a source of state funding to match available federal funds to finance the MMM program. The MMM proposal must survive Division, Department, and Governors office scrutiny before it can reach the Legislature. If we get to the Legislature, we anticipate a tough sell, with concerns likely from homeowners, Realtors, and homebuilders who would be impacted by radon MMM requirements. Strong and active support by drinking water suppliers and organizations will be crucial to the success of this proposal.

In the meantime, we recommend that water suppliers determine the radon level in their water to find out where they stand. We do not currently certify drinking water labs to test for radon, but you can contact your laboratory for advice about testing possibilities or a referral to find that service elsewhere. If you get tests run, we would be happy to receive your results - these could be useful to support the MMM proposal in the legislature.

Arsenic

As you know, EPA is nearing proposal of a revised MCL for arsenic. In Oregon, arsenic occurs naturally in volcanic geologic formations throughout the state. The final rule is due in January, 2001. Reportedly, EPA will propose a “preferred option” MCL of 0.005 mg/L (the current MCL is 0.05 mg/L)! A scan of our current database shows that 251 community and nontransient noncommunity water systems in Oregon have at least one test result in the record that is greater than 0.005 mg/L. An additional 200 systems have data analyzed at a detection levels above 0.005 mg/L, so we can't really tell where they stand.

We recommend that water suppliers ask their labs for the lower detection levels and test to determine levels with respect to the likely proposed MCL. Treatment to remove arsenic, such as ion exchange, adsorption, and reverse osmosis, is complicated and expensive.

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EPA Drinking Water Enforcement in Oregon?

In the Fall, 1999, PIPELINE. I wrote about our program capabilities as compared to the expanding scope of the drinking water regulations and program expectations. The logical outcomes of this analysis include 1) establishment of program priorities (see next PIPELINE issue), 2) partnerships with other agencies and programs, and 3) sharing of program responsibilities with others.

We met with EPA Region X over the past several months to explore opportunities to share the expanding program responsibilities in ways that preserve Oregon's leadership role as the Primacy agency for safe drinking water, but help further the overall safe drinking water effort. Two areas of opportunity identified so far are training and regulatory assistance to public water systems, and enforcement of regulations with water suppliers who persistently violate the rules.

Enforcement is the more sensitive issue. Presently, our Primacy agreement with EPA commits the state program to take timely and appropriate action against all water suppliers who violate MCLs and/or monitoring requirements repeatedly enough to meet established criteria for Significant Noncompliance (SNC). If we fail to take action, then EPA can act directly against the water supplier. Further, if we feel that any of our state enforcement efforts are unsuccessful, we can also refer the case to EPA for their direct action. This arrangement went smoothly for a number of years in which the SNC "universe" included only community and nontransient noncommunity systems. We referred only one case to EPA. But now, with the addition of transient noncommunity systems, the SNC list, generated each quarter, has grown from dozens to hundreds of cases. Most SNCs have committed repeated monitoring or reporting violations, rather than actual MCL violations. We now have a list of 400 SNCs that are unaddressed, and another 250 where we have an action in place but final resolution is pending. We simply can not effectively address that volume of enforcement.

The Drinking Water Advisory Committee has examined the enforcement issue on several occasions recently and has indicated that effective enforcement is needed for program credibility and fairness. EPA direct enforcement action is acceptable as long as the State program has taken an action and given the water supplier an opportunity to comply first. But, if that opportunity to comply with a state action is declined by the water supplier, the state can avoid potentially protracted and expensive further action by referring the case to EPA.

What does this mean to you, the water supplier? First and foremost, comply with the rules on time. Second, if you become a SNC, and receive a state action (Notice of Violation, Remedial Order, etc.), comply with that action as prescribed, and get yourself off the SNC list. Otherwise, you are likely to meet up with the EPA....

Rural Infrastructure Conference

On December 15, 1999, Senator Ron Wyden hosted conference on rural infrastructure in Eugene. The focus of the conference was to give rural Oregon community leaders the opportunity to tell the Senator and state and federal agencies about their needs for assistance with infrastructure, including drinking water and wastewater. Here's what they told us they need:

- More grant money, not loans. Projects cost people too much in their rates.
- Recognition of staffing and expertise limitations of rural communities and more technical help to assist them in putting projects together and applying for funds. An "ombudsman" approach to helping small communities solve problems?
- More flexibility and less uncertainty in state and federal regulations and requirements.
- Identification and promotion of water problem solutions that work, and identification of and promotion of alternate innovative technologies that cost less.
- Common requirements and application processes across different funding programs, one project list for all funding programs.
- Development of "How-to" guides to explain funding application processes, and identification of and solutions to common water problems.

I don't think that there's anything here we haven't heard before, but we heard it again from one large audience. We do attempt to meet some of these needs already, but clearly not either effectively or enough.

We have no shortage of identified safe drinking water projects that are eligible for SRF funding. To date, \$41M in SRF funds have been awarded to Oregon by EPA (FY 97, 98, 99). Letters of Interest have been received from communities describing 300 projects and requesting a total of \$211M. To date, we have awarded 16 loans to communities for a total of \$13.7M.

I think the above needs have implications for both the SRF loan program, and our future "capacity development strategy". First, it's clear to me that the SRF loan program is, in effect, the funding program "of last resort" in Oregon. Communities clearly feel a financial pinch, and are holding out in the hopes that they can get part of the ever-shrinking available grants from other programs (Community Development Block Grant; USDA Rural Utility Service; small grants from USFS, EDA, etc; OECD Water/Wastewater Fund). Unfortunately, projects go up in price the longer communities hold out, and the total amount of available grant funds declines year-to-year. Chances of actually benefitting from waiting are slim, indeed, and getting slimmer all the time. Plus, we have to ultimately commit our SRF funds or lose them to other states. The message to Oregon water suppliers is "don't wait - move on SRF loans!"

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UNDERGROUND INJECTION WELLS AND DRINKING WATER PROTECTION

by Barbara Priest and Dennis Nelson

Underground Injection Wells Pose a Threat to Groundwater

Injection wells, defined by EPA as: 1) any bored, drilled or driven shaft; 2) dug hole whose depth is greater than its largest surface dimension; 3) an improved sinkhole; or 4) subsurface fluid distribution system, may be a major source of nonpoint groundwater pollution as well as potentially impacting surface water quality. There are several different classes of injection wells, e.g., class I through V. This article addresses new regulations that apply to the more common class V injection wells. Typical class V injection wells include: stormwater drainage wells, industrial/commercial/utility drainage wells, geothermal reinjection wells, domestic wastewater disposal (Cesspools or septic systems with a design capacity to serve 20 or more people), automotive service drains, aquifer recharge wells, subsidence control wells, aquifer remediation wells and other miscellaneous wells (e.g., dewatering wells). The EPA estimates that there are over 600,000 of these types of injection wells in the United States. This figure, however, may be on the low side given that the Oregon Department of Environmental Quality (DEQ) estimates that there are between 50,000 and 60,000 class V injection wells in Oregon alone. In Oregon the bulk of the the wells are associated with the underground disposal of stormwater runoff.

Injection wells are of concern because they are specifically designed to place fluid directly to the subsurface. Currently 30% of the contaminated sites on DEQ's groundwater cleanup list are associated with the use of injection wells. Pollutants of concern in class V wells include heavy metals, toxic organic chemicals, nutrients, pesticides, salts and microorganisms (e.g., bacteria, viruses, *Giardia lamblia* and *Cryptosporidium*).

UIC Program Regulations

The federal Underground Injection Control program (UIC) was enacted in 1974, under the Safe Drinking Water Act, and is administered under 40 CFR 144-146. DEQ was delegated as the primacy agency in 1984. The intent of the UIC program is to protect aquifers that supply groundwater used for drinking water. In December, 1999, the EPA revised the regulations that apply to certain types of injection wells, especially in areas where underground sources of drinking water occur, i.e., delineated drinking water protections identified within the Source Water Assessment Program (see PIPELINE, Summer, 1998), or other sensitive groundwater areas identified by the State. Specifically, the new regulations prohibit large-capacity cesspools and motor vehicle waste disposal wells as of April, 2000. Existing cesspools and motor vehicle drains must be phased out by April, 2005. This part of the new regulations does not affect Oregon in that large-capacity cesspools and motor vehicle waste drains

are already prohibited statewide. DEQ is currently revising Oregon Administrative Rules which regulate injection wells.

Registration Required

All owners and operators of new and existing injection wells are federally required under 40 CFR part 144 to register with the delegated state agency (DEQ) and provide the requested inventory data, e.g., basic information regarding the location and nature of the well. The data is used to determine if the well qualifies as "rule authorized". Rule authorized means that no permit is necessary as long as the well operations do not threaten underground sources of drinking water and comply with other UIC program requirements. If an owner of a well cannot provide this inventory data, then they may be required to: 1) stop injection activities; 2) close the injection and find an alternate method of disposal, e.g., connect to a local stormwater sewer; or 3) apply for a DEQ Water Pollution Control Facility permit. Facilities that qualify as rule authorized are sent a registration letter. Jurisdictions and agencies have the option of negotiating an area wide permit or Memorandum of Agreement. In addition, to federal registration, injection wells must comply with Oregon Administrative Rule 340-40 and 340-44.

To date, only a small fraction of Oregon's class V wells have been registered. The DEQ is giving amnesty for injection well registration for privately owned wells and jurisdictions or agencies for publically owned wells until December 31, 2000. Registration amnesty covers all types of injection wells. Owners and operators of new wells are expected to register prior to use. In 2001 DEQ will begin more aggressive enforcement of the registration requirements and registration fees may be implemented.

Integration with the Source Water Assessment Program

The Source Water Assessment Reports completed by OHD and DEQ provides water systems with a delineation of their drinking water protection area (DWPA). The purpose of the delineation is to provide the water system with information regarding the potential relation between land use and water quality, i.e., information regarding what activities are occurring directly above the water system's drinking water source. An additional part of the report is a sensitivity map, indicating where within the DWPA the aquifer supplying the water system is the most sensitive to potential contamination. The sensitivity map helps the system prioritize efforts to protect their resource. The sensitivity determination relies in part on the permeability of the soils at the surface, i.e., how easy is it for a contaminant to potentially move down with infiltrating water. It should be understood that injection wells can short circuit the natural protection that soils provide because the potentially contaminated water is

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often introduced below the soil zone. Given the potential threat that underground injection wells pose to drinking water sources, it is in a water system's best interest to proceed with or encourage the registration of injection wells, particularly those that occur within the DWPA.

For more information see DEQ's UIC Internet site with access to guideline documents, frequently asked questions (FAQ) and registration forms at <http://www.deq.state.or.us>. (Water Quality Division, UIC button). For additional assistance regarding underground injection wells please contact Barbara Priest, DEQ-WQ at (503) 229-5945. For information on UIC rule revisions contact Karla Urbanowicz at (503) 229-6099. Information regarding the Source Water Assessment Program for groundwater systems can be obtained from Dennis Nelson, OHD at 541-726-2587.

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BROWNFIELDS REDEVELOPMENT IN OREGON

by Michael A. Fernandez

On November 1 and 2, 1999, over sixty people gathered at the **Tools for Redeveloping Oregon's Rural Brownfields** conference in Bend. City managers, city council members, public works directors, port authorities, county officials, environmental consultants, tribal nation representatives, and economic development specialists gathered to learn more about brownfields and how brownfield issues affect Oregon cities, counties, and port districts. The day and a half session was designed to assist rural communities in determining what brownfield sites may be in their community, learning more from other communities about their work to redevelop former industrial sites, and gathering information about financial assistance at the state and federal level, insurance programs, and other financing tools.

So what is a brownfield? A brownfield is a vacant or underutilized property where real or perceived environmental problems stand in the way of redevelopment. In Oregon, brownfield properties can be old mill sites, abandoned gas stations, plating shops, dry cleaners, or other types of commercial and industrial properties. Efforts to cleanup and redevelop former commercial or industrial properties can be helpful to drinking water supplies by isolating or eliminating sources of contamination that otherwise might endanger human health and the environment.

Successful brownfield redevelopment projects underway in Oregon include the former Astoria Plywood site being redeveloped as new residential property by the City of Astoria and the former Bald Knob/Pope and Talbot mill site redevelopment being lead by the City of Oakridge.

Federal and State Funding Assistance

Several financial assistance programs have been established at the state and federal levels to help communities that are interested in redeveloping brownfields. These programs include:

- ◆ Pilot redevelopment project grants from the U.S. Environmental Protection Agency (EPA);
- ◆ Economic Development Administration (EDA) grants for projects that create jobs;
- ◆ Community Development Block Grant (CDBG) funding from the Department of Housing and Urban Development (HUD);
- ◆ Funding for environmental assessments from Oregon DEQ;
- ◆ Brownfield Economic Development Initiative (BEDI) grant programs from HUD;
- ◆ Federal brownfield redevelopment tax credits; and
- ◆ Low interest loans from Oregon Economic & Community Development Department (OECD).

Getting Started

Are you interested in learning more about brownfield sites in your community and the opportunities for cleaning up and redeveloping these sites? Here is a list of web resources that will get you started:

- EPA web site at www.epa.gov/brownfields
- HUD web site at www.hud.gov/bfields or HUD's Community Connections program at 1-800-998-9999
- DEQ web site at www.deq.state.or.us/wmc/cleanup/brn0
- EDA at www.doc.gov/eda
- Institute for Responsible Management web site at www.instrm.org

DEQ has compiled a list of possible "brownfield" sites sorted by county. This list is available from DEQ regional offices and is also accessible via the Internet on DEQ's web site.

Free technical assistance to communities interested in exploring brownfield redevelopment is also available from Oregon State University's Technical Assistance to Brownfield Communities program. To inquire about this assistance, contact Michael Fernandez at Oregon State University in Corvallis at 541/737-4023 or by e-mail at michael.fernandez@orst.edu.

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**PERIODICALS
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TRAINING CALENDAR

Oregon Association of Water Utilities

- (503) 873-8353
- Apr. 5 Math for Operators
- Apr. 13 Source Water Protection & Chlorine Safety & Handling
- May 1 Gas Chlorination
- May 2 Gas Chlorination
- May 3 Gas Chlorination
- May 5 Gas Chlorination
- May 8-9 WT & WD Certification Review
- May 11-12 WT & WD Certification Review
- June 6 Activated Sludge

Oregon Chapter American Public Works Association

- (541) 926-0044
- Apr. 12-14 Spring Conference
- Apr. 26-28 Street Maint. & Collection Systems
- May 2-3 Road and Street Surface Repair & Maint.
- May 18-19 Pump Station Design

OCCIRS

- Chuck Commiskey/(541) 267-3128
- May 19 Cross Connection Control and the Plumbing Code

Clackamas Community College

- (503) 657-6958 ext. 2388
- Apr.30- 16th International ABPA
- May 3 Conference
- June 13-15 Waterworks School

Cross Connection/Backflow Courses

- Backflow Management Inc. (B)
- (503) 255-1619
- Clackamas Community College (C)
- (503) 657-6958 ext. 2388

Backflow Assembly Tester Course

- Apr. 10-14 Bend (B)
- May 15-19 Portland (B)
- June 5-9 Oregon City (C)
- June 26-30 Portland (B)

Backflow Assembly Tester Recertification

- Apr. 7 Portland (B)
- Apr. 28 Portland (B)
- May 4-5 Portland (B)
- May 5 Oregon City (C)
- June 9 Portland (B)
- June 16 Bend (B)

Cross Connection Inspector Course

- Apr. 10-13 Oregon City (C)
- Apr. 10-14 Portland (B)

Cross Connection Inspector Update

- Apr. 14 Oregon City (C)

Water System Training Course

Oregon Health Division
 Marsha Fox/(503) 731-4899

- Apr. 11 Grants Pass
- Apr. 20 Hillsboro
- Apr. 21 Clackamas County*
- May 10 The Dalles
- June* Coos Bay

**date and location to be announced*

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